During the 25th the low area moved north of the lower lake region, rain generally fell in the Lake region and the Ohio Valley, local storms were reported in western New York, western Pennsylvania and Michigan, and brisk southwest winds prevailed over the lower lakes. During the 26th the center passed to the lower Saint Lawrence valley, with a marked increase in energy, the rain area contracted over New England, severe thunderstorms occurred throughout New England, New York, and in northeastern Pennsylvania, and wind velocities of 52 and 51 miles per hour were reported at Woods Holl, Mass., and Oswego, N. Y., respectively. On the 27th, when low area VIII was probably central near the mouth of the Saint Lawrence River, a wind velocity of 100 miles per hour from the northwest was noted at Mount Washington, N. H.

IX.—Appeared over the middle Saskatchewan valley the night of the 25th, with pressure below 29.70, and rain and high winds on the Washington coast. Moving south of east the center reached Manitoba the night of the 26th, with pressure below 29.60, and during the 27th apparently passed rapidly eastward and united with low area VII over the northern part of the Gulf of Saint Lawrence, its passage being unattended by rain or notable disturbances.

X.—The advance of this low area over the Pacific coast north of Washington was shown by reports of the 27th, and the morning of the 28th the center occupied the region north of Washington, with pressure 29.50. By the evening of the 28th the center of disturbance had moved eastward over the Saskatchewan Valley, with pressure below 29.30, and during the 29th passed over Manitoba with an apparent loss of strength. The night report of the 30th showed this low area central over the lower Saint Lawrence valley. The passage of this area of low pressure from the Pacific Ocean to the Gulf of Saint Lawrence was unattended by precipitation. Unusually high temperatures were reached from the northern plateau region over the northern districts. In Montana the maximum varied from 89° to 93°, and in the Dakotas from 90° to 97° on the 28th.

NORTH ATLANTIC STORMS FOR SEPTEMBER, 1892.

[*Pressure in inches and millimeters; wind-force by Beaufort scale.*]

The paths of storms that appeared over the west part of the north Atlantic Ocean during September, 1892, are shown on Chart I. These paths have been determined from reports of observations by shipmasters received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

The north Atlantic normal pressure for September is above 30.10 (764) from the northwest coast of Africa westward over the middle-eastern districts of the United States. The normal pressure is lowest from mid-ocean in latitude north 60° over Iceland, Spitzbergen, and eastern Greenland, where it is below 29.70 (754). There is usually a decrease of pressure over the north Atlantic in September, except in the middle latitudes and over the eastern part of the ocean south of the 55th parallel. The most marked decrease occurs north of the 60th parallel, and in an area extending northeastward from the eastern West Indies to the Azores, where it is more than .05. The greatest increase is shown from the Atlantic coast between the 35th and 50th parallels over the Banks of Newfoundland, where it exceeds .05.

The storms of September usually pass east-northeast from Newfoundland to the region north of Scotland, a limited number, averaging less than two per month, advancing over the British Isles. The average velocity of the storms in the middle latitudes is 19 statute miles per hour. An average of two storms per month traverse the ocean from the American to the European coasts in September. Well-defined and destructive September cyclones have averaged about 2 per month over the West Indies. These storms generally move westward from the region of the Windward Islands and recurve northward over the Gulf of Mexico. About one in five of the storms of this class reach the European coast, one in five have no easterly component, one in ten disappear over Mexico, and the balance dissipate over the eastern part of the United States or over the Atlantic Ocean.

No storms of marked severity were reported on the north Atlantic Ocean in September, 1892. At the opening of the month low area VIII for August, 1892, was central near the mouth of the Saint Lawrence River. This storm apparently crossed the ocean. The morning of the 2d it had advanced north of Newfoundland, and on the 3d was central north of the Grand Banks, from which region it moved north-northeast and passed north of the British Isles during the 7th, its passage being attended on the 5th and 6th by westerly gales of force 8 to 9 over the eastern part of the ocean. On the 1st the pressure was low northwest of the British Isles, and on the 2d a storm was central north of Ireland. The night of the 2–3d this storm apparently moved eastward over the northern part of the British Isles.

On the 6th low area I moved eastward over the northern part of the Gulf of Saint Lawrence, and the morning of the 7th was central off the Labrador coast, with pressure below 29.60 (752). From that position the center moved rapidly northeastward and disappeared in the direction of Iceland on the 8th. The morning of the 11th a storm was apparently central to the southward of Bermuda, and from midnight of the 11th to 4 a. m. of the 12th a thunderstorm, with high wind and rain, prevailed over the Bermuda Islands. Moving rapidly northeastward, this storm passed east of the Grand Banks during the 13th, with pressure about 29.70 (754) and north gales of force 8 to 9, and reached mid-ocean in latitude about 50° on the 14th, with pressure about 29.30 (744) and westerly gales of force 8 to 10. During the 15th this storm passed over or north of the British Isles.

On the 11th reports about the British Isles indicated the approach of a storm from the northwest, and on the 12th the disturbance was apparently central over Ireland, with pressure below 29.70 (754) and gales of force 10 east of the 20th meridian. By the 13th this storm had apparently passed over the North Sea. On the 16th low area IV passed north of the Gulf of Saint Lawrence, and on the 17th was central off the Labrador coast, where the barometer continued low until the 19th. By the 20th this storm had moved over mid-ocean in high latitudes, where the pressure continued low until the 22d, after which the area of low pressure apparently moved eastward.

On the 20th low area VI was central south of Newfoundland, from which region the center moved rapidly northeastward and joined the area of low pressure central over mid-ocean, attended by north gales of force 10, and pressure below 29.70 (754) between the 30th and 40th meridians. With the advance of this storm over mid-ocean the pressure decreased northwest of the British Isles and fresh gales were reported over the eastern part of the ocean on the 24th and 25th. On the 26th the pressure was below 29.40 (747) near the 20th meridian, and westerly gales of force 8 were encountered in that region. By the 27th the center of disturbance had passed eastward over the British Isles. The morning of the 28th

low area VIII was apparently central over the northeast part of the Gulf of Saint Lawrence, and by the morning of the 29th this storm had passed northeastward off the Labrador coast. By the 30th the center had advanced to the 45th meridian and a storm of considerable strength had advanced from the northwest over the British Isles.

OCEAN FOG IN SEPTEMBER.

The limits of fog belts west of the 40th meridian, as reported by shipmasters, are shown on Chart I by dotted shading. Near the Banks of Newfoundland fog was reported on 19 dates; between the 55th and 65th meridians on 5 dates; and west of the 65th meridian on 3 dates. Compared with the corresponding month of the last 4 years the dates of occurrence of fog near the Grand Banks numbered 4 more than the average; between the 55th and 65th meridians, 1 less than the average; and west of the 65th meridian, 6 less than the average. The fog reported by shipmasters and that noted by observers of the Weather Bureau on the New England and middle Atlantic coasts generally attended the advance or passage of general storms.

OCEAN ICE IN SEPTEMBER.

Ice was reported only in, and slightly to the eastward of, the Straits of Belle Isle, where it was encountered throughout the month. A reference to the table will show that in the last 10 years there have been but two Septembers, in 1891 and 1892, for which ice has not been reported south of the 50th parallel, and that the eastern limit of ice for the current month is nearly 3° farther west than previously reported for September. The positions of icebergs and field ice reported for September, 1892, are shown on Chart I by ruled shading.

The following table shows the southern and eastern limits of the region within which icebergs or field ice were reported for September during the last 10 years:

Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
	° ′	° ′		° ′	° ′
September, 1883.....	48 25	47 10	September, 1883.....	49 01	44 33
September, 1884.....	46 00	53 21	September, 1884.....	47 39	49 14
September, 1885.....	45 40	48 22	September, 1885.....	48 40	46 27
September, 1886.....	46 40	53 00	September, 1886.....	48 00	48 40
September, 1887.....	45 37	49 50	September, 1887.....	45 37	49 50
September, 1888.....	Off Cape	Race	September, 1888.....	53 00	52 08
September, 1889.....	46 21	48 22	September, 1889.....	48 59	46 48
September, 1890*.....	45 30	48 00	September, 1890.....	50 30	46 22
September, 1891.....	Straits of	Belle Isle	September, 1891.....	53 18	51 20
September, 1892.....	Straits of	Belle Isle	September, 1892.....	52 04	54 55
Mean.....	47 34	50 52	Mean.....	49 36	48 06

*On the 4th a large lump of ice 100 feet long and 6 feet above water was reported in N. 36° 49′, W. 42° 18′; this is the lowest latitude in which ice was ever reported in the north Atlantic Ocean.

TEMPERATURE OF THE AIR (expressed in degrees Fahrenheit).

The distribution of mean temperature over the United States and Canada for September, 1892, is exhibited on Chart II by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the average for the several districts. The normal for any district may be found by adding the departure to the current mean when the temperature is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Weather Bureau represents the mean of the maximum and minimum temperatures.

The mean temperature was highest in the lower Colorado and Gila valleys, where it was above 90, and it was above 80 in western and southern Arizona, southeastern California, and at Key West, Fla. In the south Atlantic, Gulf, and Southwestern states, the west and south portions of the southern plateau region, and in the central valleys of California the mean temperature was above 70. The lowest mean temperature was noted in the upper Saskatchewan valley, on the north coast of Lake Superior, and at mountain stations in Colorado, where it was below 50, and the mean values were below 60 north of a line traced from the central New England coast over the central lake region, thence to east-central Montana, thence to northern New Mexico, thence to eastern Oregon, thence to northeastern California, and east of this line traced thence over eastern Oregon, and thence eastward over the valley of the Columbia River. The mean temperature was also below 60 along the immediate Pacific coast north of San Francisco, Cal.

DEPARTURES FROM NORMAL TEMPERATURE.

The mean temperature was above the normal, except in the middle and south Atlantic and Gulf states, and along the middle and south Pacific coasts. The greatest departure above the normal temperature was noted over the eastern part of the plateau region, and over northern Minnesota and parts of the Dakotas and Upper Michigan, where it was 4 to 5. The most marked departure below the normal temperature was reported in the interior of the middle Gulf states, at Baltimore, Md., and San Diego, Cal., where the month was 2, or more, cooler than usual.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for September for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for September, 1892; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for September, during the period of observation and the years of occurrence:

State and station.	(1) Normal for the month of Sept.	(2) Length of record.	(3) Mean for Sept., 1892.	(4) Departure from normal.	(5) Extreme monthly mean for September.			
					Highest.	Year.	Lowest.	Year.
Arizona.	°	*Years*	°	°	°		°	
Fort Apache	66.2	20	66.2	0.0	71.4	1879	61.0	1884
Fort Mohave	85.6	20	88.0	+ 2.4	90.2	1875	81.8	1876
Whipple Barracks	66.3	21	67.8	+ 1.5	74.4	1879	60.5	1884
Arkansas.								
Keesees Ferry	71.0	11	70.2	− 0.8	76.4	1884	67.5	1883
California.								
Fort Bidwell	62.1	21	61.9	− 0.2	65.9	1880	54.0	1884
Riverside	72.7	10	.....	.....	76.8	1883	69.2	1884
Colorado.								
Las Animas	65.4	10	67.6	+ 2.2	67.6	1892	63.5	1883
Florida.								
Merritts Island	79.7	10	80.0	+ 0.3	82.5	1882	78.0	1890
Georgia.								
Forsyth	76.4	18	75.2	− 1.2	82.2	1884	72.8	1888
Idaho.								
Boise Barracks	61.1	18	63.0	+ 1.9	68.0	1888	54.6	1884
Fort Sherman	56.2	9	58.6	+ 2.4	58.6	'85, '91, '92	52.9	1881
Illinois.								
Centralia	66.3	11	.....	.....	76.0	1881	52.5	1882
Indiana.								
Lafayette	64.1	9	65.4	+ 1.3	69.7	1891	61.2	1883
Indian Territory.								
Fort Supply	69.7	11	71.2	+ 1.5	71.7	1886	66.6	1890
Iowa.								
Cresco	58.8	19	60.8	+ 2.0*	64.6	1891	54.3	1873